

Claims

1. A button indexing device used in a button attaching machine for attaching a button to be indexed in a specific orientation on a fabric of garments or the like, comprising: a lower mold provided at a button attaching position of said button attaching machine; a driving section for turning the lower mold around a vertical axis; a laser beam source for irradiating a laser beam onto a point of a specified circular track of the button to be held in the lower mold around the vertical axis; an optical sensor for detecting light reflected from or scattered by the button; and a stop section for stopping said lower mold in a rotation position capable of obtaining the right orientation when said optical sensor detects the minimum or maximum amplitude.
2. The button indexing device according to Claim 1, wherein said button needs to be indexed in a specific orientation and has a reflecting or scattering surface thereon, said reflecting or scattering surface having a portion with the least or the most reflection or scattering, and the stop section for stopping said lower mold in the rotation position capable of obtaining the right orientation is the section in which the portion with the least or the most reflection or scattering provided on said reflecting or scattering surface is sensed when said optical sensor detects the minimum or maximum amplitude, and upon this detection said lower mold is stopped in the rotation position capable of obtaining the right orientation.
3. The button indexing device according to Claim 1, wherein said optical sensor is provided in the same side as the laser beam source for detecting the return light reflected from the button.
4. The button indexing device according to Claim 3, wherein said button is provided with a light-reflective vertical surface and a light-reflective horizontal surface meeting to each other to introduce a laser beam from said laser beam source at a prespecified angle to said horizontal surface and vertical surface.
5. The button indexing device according to Claim 3, wherein said button is provided with a light-reflective inclined surface and a laser beam from said laser beam source is introduced at a prespecified angle to said horizontal surface and vertical surface for irradiating a point of said circular track.
6. The button indexing device according to Claim 3, wherein said laser beam source and said optical sensor are provided side by side in the substantially same position so that

an incident light and a reflecting light to said button go back-and-forth at a corresponding inclined angle.

7. The button indexing device according to Claim 1, wherein said laser beam source is provided in a side contrary to said optical sensor against the vertical axis of the lower mold.

8. The button indexing device according to Claim 7, wherein said laser beam source and said optical sensor are provided side by side in the substantially same position so that an incident light and a reflecting light to said button go back-and-forth at a corresponding inclined angle.

9. The button indexing device according to Claim 7, wherein said button is provided with a tab crotch or a concave section having a light-reflective horizontal surface, and a laser beam from said laser beam source irradiates a point of said circular track including said horizontal surface.

10. The button indexing device according to any one of Claims 1 to 7, wherein a button attaching machine comprises a feed hopper provided in the upper section thereof, an inclined shoot connected to said feed hopper, a guide mechanism having a guide path receiving a button from said inclined shoot, a pusher for pushing the button, the lower mold provided at a button attaching position adjacent to an exit of said guide path for receiving and holding the button, an upper mold provided opposing to said lower mold for receiving and holding another button to be jointed to said button, and the plunger for moving said upper mold up and down.

11. A method of adjusting a button indexing device in a button attaching machine for attaching a button to be indexed in a specific orientation on a fabric of garments or the like, comprising the steps of:

using the button indexing device comprising a lower mold provided at a button attaching position of said button attaching machine, a driving section for turning the lower mold around a vertical axis, a laser beam source for irradiating a laser beam onto a point of a specified circular track of the button to be held in the lower mold around the vertical axis, an optical sensor for detecting light reflected from or scattered by the button, and a stop section for stopping said lower mold in a rotation position capable of obtaining the right orientation when said optical sensor detects a maximum or minimum amplitude; and measuring a light amplitude curve of reflected light or scattered light along said circular track in accordance with the type of buttons, and predetermining the rotation

stopping position of said lower mold by the position with maximum amplitude associating with the regular button orientation.

12. A method of indexing a button in a button attaching machine for attaching a button to be indexed in a specific orientation on a fabric of garments or the like,

5 comprising the steps of:

providing a reflecting or scattering surface on the button, and providing a portion with the least or the most reflection or scattering on said reflecting or scattering surface;

10 using a button indexing device comprising a lower mold provided at a button attaching position of said button attaching machine, a driving section for turning said lower mold around a vertical axis, a laser beam source for irradiating a laser beam onto a point of a specified circular track of the button to be held in the lower mold around the vertical axis, an optical sensor for detecting light reflected from or scattered by the button; and

15 sensing a portion with the least or the most reflection or scattering provided on said reflecting or scattering surface by said optical sensor detecting the minimum or maximum amplitude, and stopping said lower mold in a rotation position capable of obtaining the right orientation.